Amendments to the Drawings:

The attached sheet of drawings includes changes to Figs. 1A and 1B. This sheet, which includes Figs. 1A and 1B, replaces the original sheet including Figs. 1A and 1B. In both of Figs. 1A and 1B, the words "Prior Art" have been added, as well as parentheses around such words.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes

REMARKS

Reconsideration of the application in view of the above amendments and the following remarks is requested.

In accordance with 37 CFR 1.121, the claims which are being currently amended are presented with markings to indicate the changes that have been made relative to the immediate prior version.

Drawings

The Examiner indicated that Figs. 1A and 1B should be designated by a legend such as - - Prior Art - -. Figs. 1A and 1B have been amended accordingly. The corrected drawings are enclosed.

Oath/Declaration

The Examiner indicated that the declaration was defective. A new declaration is enclosed, in accordance with 37 CFR 1.67(a).

The Applicant submits that the Examiner's concerns regarding the declaration have been addressed with the submission of the enclosed declaration.

Claim Objections

The Examiner objected to an informality in claim 7. Claim 7 has been canceled, and the Applicant submits that this objection is now moot.

Claim Rejections - 35 U.S.C. §102(b)

Claims 1 – 8, 10 – 16, 18 – 19, and 21 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. patent application no. 09/975,196, published as U.S. 2002/0081956 (Bennett et al.). The Examiner indicated that:

> Of particular interest is the embodiment of Bennett's invention shown in Figure 3, which shows a detailed cross-sectional view of a carrier head as in Figure 1, and including a retaining ring (see paragraphs 0020 – 0022).
> . . . the carrier heads 100 can be considered "components" as set forth in the claims. Broadly speaking, these carrier heads or "components" must "cooperate with" each other in order to function properly to ensure polishing of the workpiece . . .
> As shown in Figure 3, note that rigid rings 203 and 184 are considered "constituent parts", between which, in what is broadly considered a "slot" or "aperture", is sandwiched planar PVC damping material 200 (paragraphs 0041 and 0032).
> . . . note that paragraph 0056 explicitly teaches that the "constituent parts" 184 and 203 may be "manufactured from aluminium or any other material that provides a suitable amount of stiffness to the retaining ring".

Claims 1, 2, 3, 7, 8, 10, 11, 12, and 16 have been canceled, and claims 4, 5, 9, 13, 17, 18, 20, and 21 have been amended to better define the invention. Claim 22 is new, and has been added to better define the invention.

The Applicant's invention is directed to a component which is substantially rigid once assembled, and which forms part of a machine tool. As indicated in paragraph 0002 of the application herein, the machine tool function to be performed by the machine tool is a material removal process, in which material is removed from a metal workpiece. Accordingly, a great deal of vibration is typically produced by known machine tools, due to the large stresses to which the workpiece and the machine tool are subjected while the workpiece is machined.

Also, in a machine tool, the parts thereof must be able to do these machine tool processes to a very high degree of accuracy. To achieve the degree of accuracy needed, it is necessary that all the relevant portions of the machine tool – including, e.g., the parts of a component constructed in accordance with the invention – must remain in predetermined

positions relative to each other, notwithstanding the very large stresses to which they are subjected.

The Applicant's invention is based on the surprising innovation that a component, formed of two substantially rigid constituent parts which are separated by a non-resilient layer of damping material, can withstand the very large stresses to which it is subjected as part of a machine tool without movement of one part of the component relative to the other, which would affect the required high degree of accuracy. Also, the extent to which vibration is reduced due to the separation of the two constituent parts by a relatively thin, non-resilient damping material is surprising.

As described in paragraph 0005 of the application, in the prior art, components used in machine tools are typically large castings, i.e, cast iron pieces which are relatively large. A piece of steel of the same thickness as a piece of cast iron has substantially greater tensile strength, allowing for weight reduction while maintaining rigidity. However, steel generally tends to transmit vibrations and noise more readily than cast iron, and because of this, the use of steel in a machine tool structure generally has been impractical.

With the Applicant's invention, the strength and weight reduction advantages of steel can be utilized to provide a machine tool which is, overall, a much better machine. Using cast iron, prior art machine tools are built as large as possible, relying on a greater mass and a tendency not to transmit vibration and noise level as much as steel does. However, using the Applicant's invention, a machine tool can be built with reduced weight and simultaneously increased rigidity, maintaining high accuracy and substantially reducing vibrations, compared to known machine tools which include cast iron components.

In the Applicant's invention, therefore, a very different approach to the problem of limiting vibration in a machine tool is provided (i.e., as compared to the prior art), with surprising results. Instead of forming the largest component possible, in the Applicant's invention, a portion of a machine tool (e.g., the base) is made up of a number of

components, each of which includes a sheet of damping material. In the Applicant's invention, the portion of the machine tool formed by the assembly of the components must be as stiff as a single casting forming such portion would be. No movement of any part of any component relative to any other part of the component is permitted, because that would adversely affect the accuracy required of the machine tool function.

The thickness of the damping material used in the component of the invention is therefore very small, as it is important that the component have a relatively high degree of stiffness. As indicated in paragraph 0029 of the Applicant's application herein, the sheets of damping material are preferably between 0.01 inch and 0.02 inch thick. Surprisingly, however, a sheet of non-resilient material having a relatively small thickness substantially limits vibration. It is thought that a sheet of damping material having a greater thickness would result in the component having a somewhat lower overall stiffness than is required.

In paragraph 0054 of the Bennett et al. reference, the following statements are made:

> Any material that does not rebound to its original shape when deformed may be used as a damping material . . . The damping material may be . . . a visco-elastomer, a soft-plastic, or any other material that has better vibration damping properties than materials immediately adjacent to the damping material.

These statements appear to be generally applicable to any damping material in any structure disclosed in Bennett et al. In contrast, deformation of the damping material in the Applicant's invention would be unacceptable, as this would result in the shifting of parts of a component relative to each other. The Bennett et al. reference therefore does not disclose a structure having overall stiffness which is similar to that of the components of the invention.

Accordingly, the Applicant submits that the Bennett et al. reference does not anticipate the revised claims (or the claims (6 and 15) which were not revised, but which are dependent on revised claims) or new claim 22.

Claim Rejection – 35 U.S.C. §103(a)

The Examiner also indicated that claims 9, 17, and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable in view of Bennett et al. Claims 9, 17, and 20 have been revised to indicate that the parts are made of machined steel.

As indicated above, in the prior art, cast iron is formed into large castings, which have a number of disadvantages as compared to using machined steel parts to form components, as in the Applicant's invention.

Although the Bennett et al. reference discloses a structure in which a "damping material" is positioned between two metal pieces which could be steel, the overall structure disclosed in Bennett et al. is very different from the structure of the Applicant's invention because the Applicant's damping material is non-resilient. Therefore, the Applicant submits that the Bennett et al. reference neither teaches nor suggests the Applicant's invention as defined in revised claims 9, 17, and 20.

Accordingly, the Applicant submits that revised claims 9, 17, and 20 are not obvious in view of Bennett et al.

The Commissioner is authorized to charge the applicable fees to the Applicant's agent's account, Deposit Account No. 501613.

On the basis of the enclosed documents and the foregoing remarks, reconsideration of this application and its early allowance are requested.

Respectfully submitted,
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Annotated Marked-Up Drawings

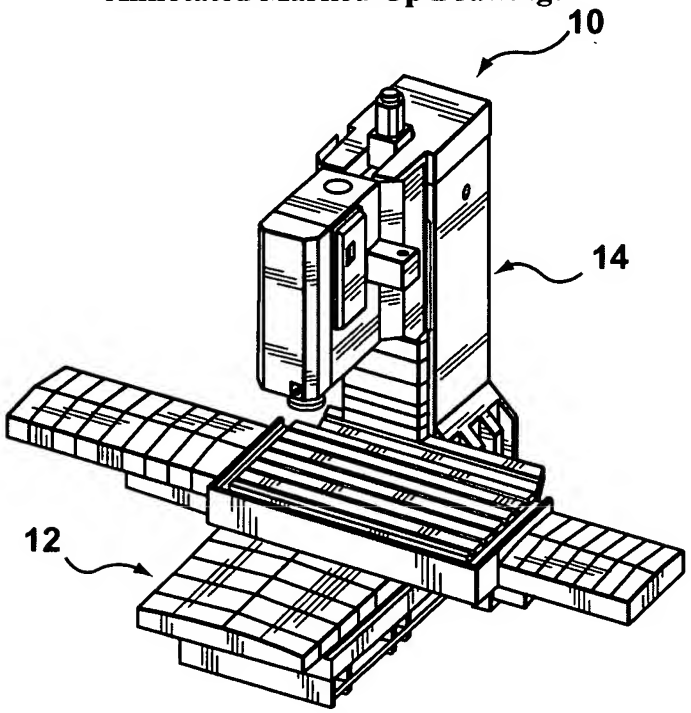

FIG. 1A (Prior Art)

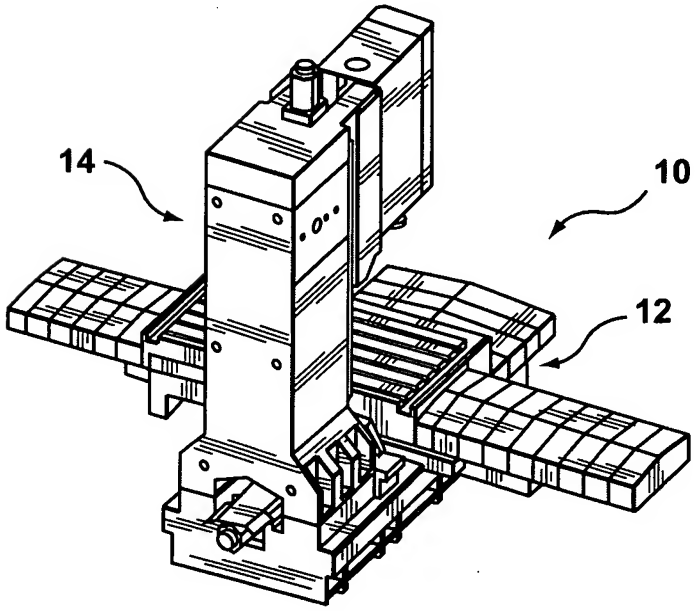

FIG. 1B (Prior Art)